Presented To:

Montana Department of Transportation

West Central Environmental Consultants, Inc.

~~Remedial Investigation – MDT Nashua UST Facility &~~

Aquifer Evaluation – MDT Former Econo Lumber Glasgow Facility

Task Order 313740

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cuttings that exhibit hydrocarbon impacts. Any impacted soils encountered during the investigation will be removed from the site by WCEC for eventual disposal at an appropriate facility.

WCEC will survey all site wells in accordance with the MTDEQ Technical Guidance Document #2. WCEC will survey the top of casing on all monitoring wells at the facility to The Forth Order (0.10 feet times the square root of total distance of the level loop in miles) with a measurement precision of 0.01 feet. The latitude and longitude of wells will be surveyed using a Trimble Geo 7X GPS with 1-centimeter post processed accuracy. Site well casing elevations will be correlated to the North American Vertical Datum of 1988 (NAVD 88) using an onsite elevation control point. The location of new monitoring wells will be included on future site detail maps generated to scale and overlaid on a site orthophoto. Additionally, the locations of underground utilities in the area will be mapped using the GPS to allow for evaluation of potential contact with contaminated media.

Following installation, WCEC personnel will develop each newly installed monitoring well using a downhole electric pump and surge block. Wells will be allowed to stabilize for a minimum of 24 hours prior to sampling. Groundwater purging, monitoring, and sampling will be conducted using low-flow methodology as outlined in the DEQ Groundwater Sampling Guidance. Groundwater sample collection, preservation, and handling will be conducted according to WCEC SOPs and applicable DEQ guidance. All soil and groundwater samples collected during the investigation will be delivered to Energy Laboratory (Energy) for analysis of VPH and EPH. Samples from the nested well pair will be also analyzed for lead scavengers 1,2-DCA and EDB using EPA Methods 8260B and 8011, respectively. Additionally, WCEC will collect a water sample from the Post Office tap for analysis of VOCs by EPA Method 524.2. Within 45 days of receipt of results from the remedial investigation, WCEC will prepare and submit to MDT a draft Remedial Investigation Report that complies with DEQ Guidance DEQ-WMRD-RI-1. A final version will be submitted within two weeks of receipt and incorporation of MDT's comments.

2.4 Aquifer Evaluation / Groundwater Monitoring – MDT Former Econo Lumber Glasgow

Upon award of the contract, WCEC will coordinate a single field event to complete the SOW at the facility as detailed in Attachment A of the Statement of Work Task Order 313740. Work at this facility will be conducted in conjunction with the remedial investigation at the Nashua facility to reduce overall cost. Previous reports for the Former Econo Lumber facility including those completed by WCEC were reviewed in preparation of this RFP response and in design of the aquifer evaluation. Proposed removal of the target source material requires excavation within the uppermost unconsolidated groundwater aquifer; therefore, the RFP includes an aquifer evaluation to an estimate of the volume of water that may need to be managed from dewatering during excavation. The target material is located within the footprints of excavations that occurred in 2006 and 2011 to remove petroleum-contaminated soil. These excavations extended to depths of 18 and 20 feet below ground surface and collectively removed about 1,295 cubic yards of material. Located along the margin of the Milk River / Cherry Creek floodplain, the site's surficial geology is comprised of alluvium and colluvium [MBMG, 2020]. Available borehole logs indicate a mixture of clay, sand, and gravel (colluvium) in the upper 14 feet and interbedded clay, sand, and gravel below this depth. Observations from the 2011 soil excavation indicate groundwater was encountered between 17 and 18 feet below ground surface [Olympus, 2011]. Water levels have been measured within 3.5 feet of ground surface in monitoring wells at the site. It is unknown but assumed that backfill material within the previous excavation footprints is more permeable than the native,

undisturbed soil and is saturated due to preferential infiltration of precipitation and inundation by groundwater. Monitoring wells MW-3 and MW-9 are screened across the backfill and the underlying water-bearing lithologies. These factors complicate the aquifer test design, data interpretation, and inflow estimates.

WCEC proposes a combination of slug tests, multiple well pumping test, and, if necessary, single well pumping tests. Single well tests (slug and pumping) conducted at monitoring wells outside the previous excavation footprint will provide data to estimate inflow from undisturbed lithologies. A multiple well pumping test will integrate data over a comparatively large area and provide a basis to estimate the combined inflow from the backfill material and adjacent undisturbed lithologies. This approach allows the relative contributions of the backfill material and undisturbed water-bearing lithologies to be estimated. The proposed work sequence is as follows:

Slug tests will be performed first since they are short duration tests that only impact groundwater conditions in the immediate vicinity of the well. Slug tests will be performed at wells MW3, MW4, MW8, and MW9. Both slug-in and slug-out tests will be conducted. Water level data will be collected during slug testing with a combination pressure transducer and datalogger. Slug test data will be analyzed with AQTESOLV analytical software using standard methods appropriate for the hydrogeologic setting and well construction. Second, a multiple well pumping test will be conducted using MW9 as the pumping well. Observation wells will be MW-1, MW2, MW-3, MW-4, MW-6, and MW-8. Water will be pumped from MW9 using a variable speed electric submersible pump (e.g., Grundfos Rediflo 2) for a minimum of four hours and maximum of eight hours. Water levels will be monitored in the pumping and observation wells using a combination of pressure transducers /dataloggers and an electronic water level indicator. Pumping test data will be analyzed with AQTESOLV analytical software using standard methods appropriate for the hydrogeologic setting. Third, single well pumping tests will be performed at MW3 and/or MW8 if water levels in either do not respond adequately during the multiple well pumping test. A single well pumping test will also be performed at MW4 if the slug test and/or multiple well test data is insufficient. Water level data will be collected using a combination pressure transducer and datalogger. Data will be analyzed with AQTESOLV analytical software using standard methods appropriate for the hydrogeologic setting. Trench inflow will be estimated using analytical models developed by S.S. Papadopulos & Associates, Inc. for steady state groundwater inflow into open excavations. All purge water generated during the pump test and groundwater monitoring will be applied to pervious surfaces at the facility. WCEC will present the findings of the aquifer evaluation and excavation feasibility analysis in a draft report within 45 days of completion of the field event. A final version will be submitted within two weeks of receipt and incorporation of MDT's comments.

Following the aquifer evaluation, WCEC will conduct groundwater monitoring to include depth to water measurements in all nine onsite monitoring wells (MW-1 through MW-9) with groundwater parameter and sample collection from seven wells (all except MW-2 and MW-5). The requested groundwater monitoring will be conducted as detailed by MDT in the SOW and in compliance with DEQ guidance for low-flow purging, monitoring, and sampling. Groundwater samples will be submitted to Energy for analysis of VPH, lead scavengers 1,2-DCA (EPA 8260B) and EDB (EPA 8011), and IBIs. WCEC will provide MDT with groundwater monitoring field sheets for each well including depth to water, purging and groundwater parameter stabilization data, and instruct Energy to deliver the analytical results package directly to MDT.

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Cost Proposal for Aquifer Evaluation & Groundwater Monitoring

MDT Former Econo Lumber Glasgow
Facility ID 99-95002, Release 4395

11.3.2020

TASK	Unit Cost	Units	Total Cost
Task 1: Project Coordination, Permitting & Management			
Project Manager	$ 130.00	8	$ 1,040.00
	Sub Total		**$ 1,040.00**
Task 2: Aquifer Testing & Groundwater Monitoring			
Vehicle Mileage	$ 0.63	450	$ 283.50
Mobilization - Staff Scientist	$ 115.00	18	$ 2,070.00
Aquifer Testing - Staff Scientist	$ 115.00	16	$ 1,840.00
Low-Flow Well Samping (per well)	$ 200.00	7	$ 1,400.00
Grundfos Rediflo 2 Pump (per day)	$ 325.00	2	$ 650.00
Transducer Set (per day)	$ 100.00	2	$ 200.00
Ice	$ 2.00	6	$ 12.00
Per diem (food)	$ 30.50	5	$ 152.50
Lodging (State Rate)	$ 105.00	5	$ 525.00
	Sub Total		**$ 7,133.00**
Task 3: Aquifer Test & Excavation Feasibility Report			
Staff Scientist	$ 115.00	24	$ 2,760.00
Project Manager	$ 130.00	2	$ 260.00
	Sub Total		**$ 3,020.00**
	WCEC Costs		**$ 11,193.00**
	Admin Fee (1.5%)		**$ 167.90**
	Total Cost w/Fee		**$ 11,360.90**